

SUPPLEMENTARY MATERIAL

Using centroid time-delays to characterize source durations and identify earthquakes with unique characteristics.

Zacharie Duputel^{1*}, Victor Tsai¹, Luis Rivera² and Hiroo Kanamori¹

(1) Seismological Laboratory, California Institute of Technology, Pasadena, California.

(2) Institut de Physique du Globe de Strasbourg, UdS and EOST/CNRS UMR 7516, France.

* To whom the correspondence should be addressed: zacharie@gps.caltech.edu

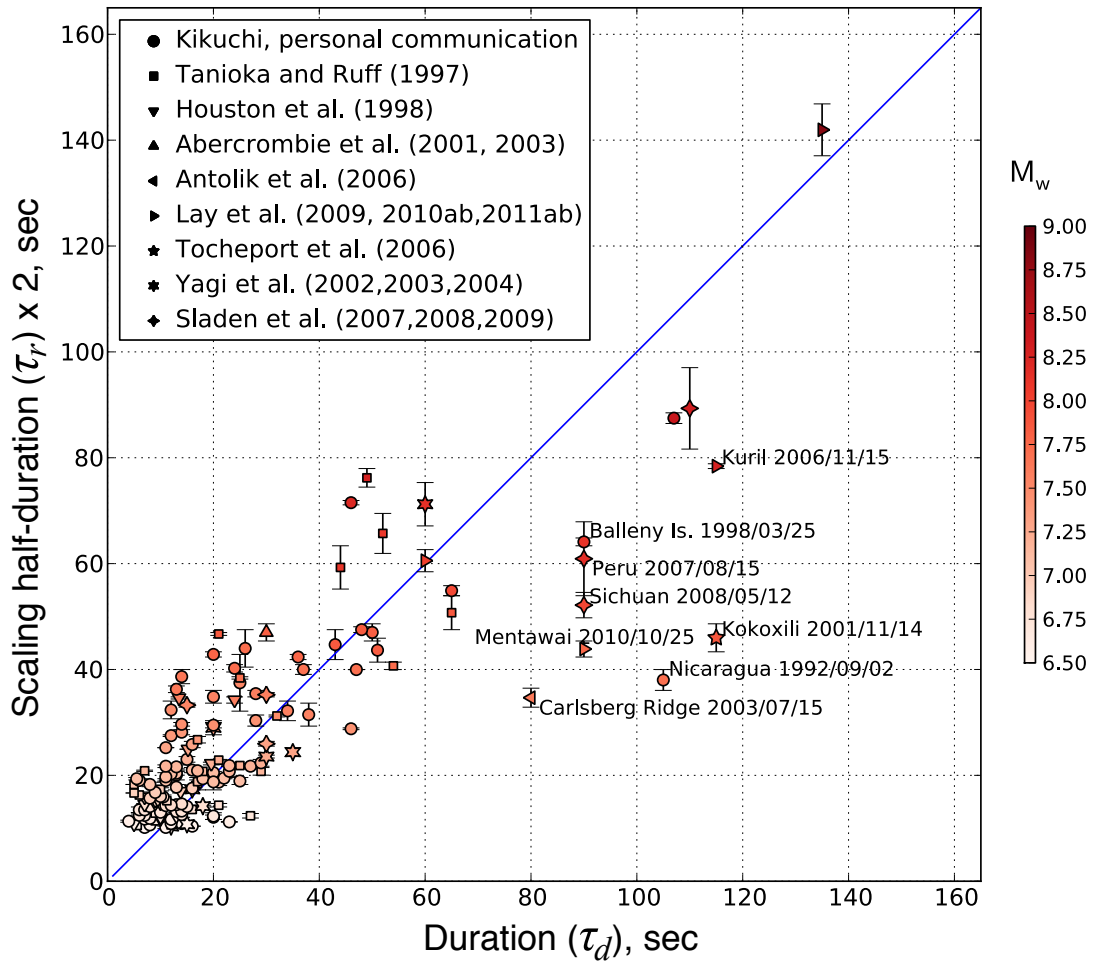


Figure S1. Comparison between predicted half-duration (τ_r) from equation (1) and rupture duration. The same comparison between centroid time-delay (τ_c) and the rupture duration is shown in Fig. 2a of the main text. Rupture duration measurements provided in the literature for $M_w \geq 6.5$ earthquakes are compared with duration estimated from our time-shift measurements (Abercrombie et al., 2003; 2001; Antolik et al., 2006; Houston et al., 1998; Lay et al., 2010a; 2010b; 2011; Lay and Kanamori, 2011; Lay et al., 2009; Sladen, 2009a; 2009b; 2008a; 2008b; 2007a; 2007b; Kikuchi, written communication, 2001; Tanioka and Ruff, 1997; Tocheport et al., 2006; Yagi, 2004; 2003; 2002).

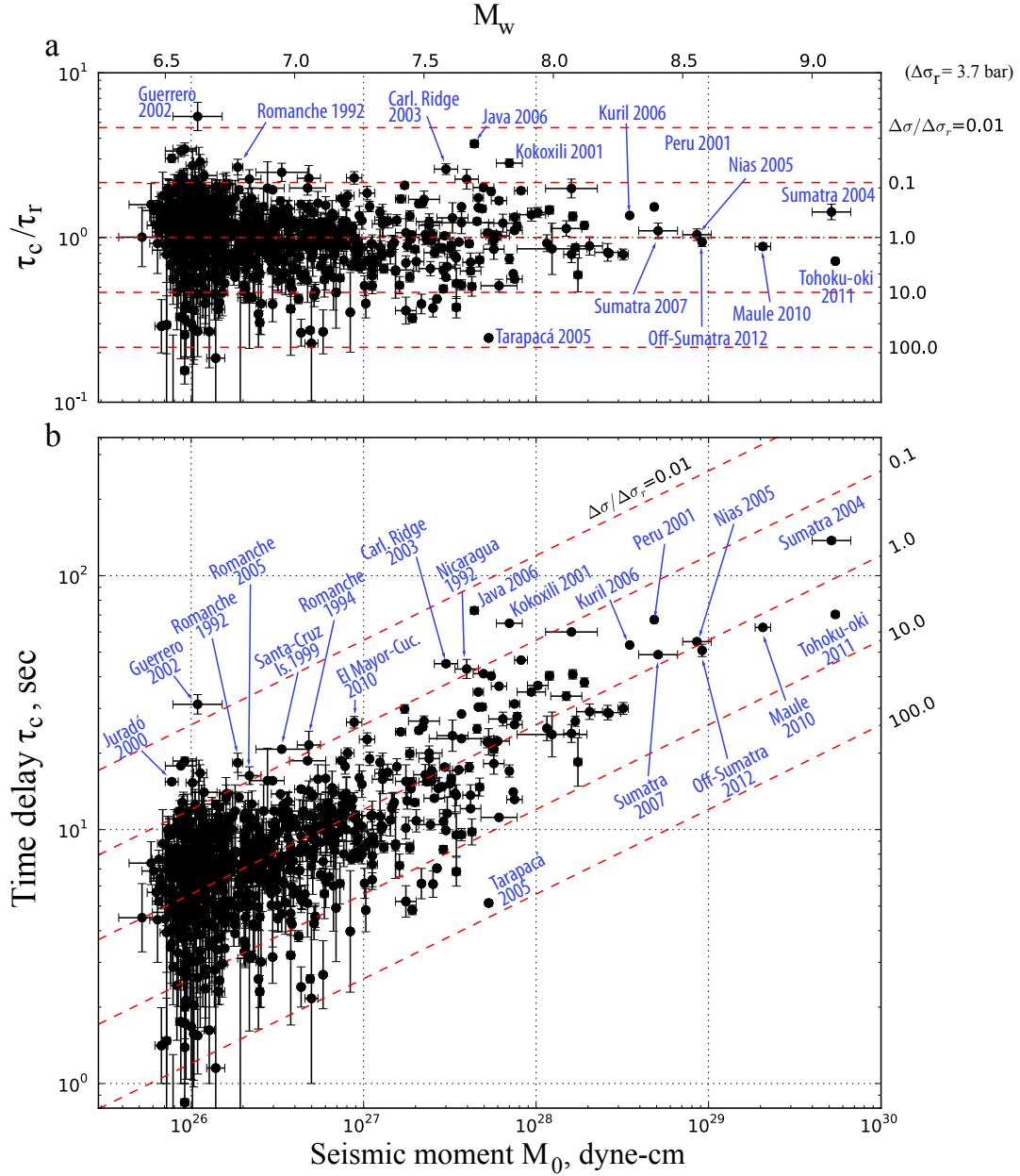


Figure S2. Same as Fig. 4 but after correcting measured time-delays τ_c from a 1 sec baseline. (a) Relative time-delays τ_c/τ_r and (b) measured time-delays τ_c are shown as a function of the seismic moment. Black circles correspond to the geometric mean between GCMT and WCMT observations while error bars represent the deviation between GCMT and WCMT measurements for each earthquake. Stress parameter ratios $\Delta\sigma/\Delta\sigma_r$ obtained assuming a reference $\Delta\sigma_r = 3.7$ bars are presented on each graph. Event names are given for obvious τ_c/τ_r outliers and large events.

evid disturbed event	evid main event	Δ O.T., s	M_{w-gcmt}	disturbed event	M_{w-gcmt} main event
020890B	020890A	1888		6.56	6.73
052490C	052490B	556		7.04	7.05
061490C	061490B	18395		6.60	7.05
051792C	051792B	1573		7.21	7.06
090292M	090292A	20045		6.63	7.62
071394D	071394B	2245		6.63	7.15
042195C	042195B	1216		6.80	6.85
042195D	042195B	1491		7.15	6.85
042195K	042195D	16933		6.80	7.15
081695L	081695D	21420		6.55	7.71
092096F	092096E	37		6.60	6.52
101996E	101996D	548		6.87	6.70
110998C	110998B	510		7.00	6.72
111600C	111600B	10040		7.81	8.00
111800F	111700Q	18232		6.60	7.77
120600E	120600C	20794		6.52	7.00
010101D	010101B	7047		6.78	7.43
081902C	081902A	443		7.69	7.63
062003G	062003D	25863		6.76	7.03
092503K	092503C	4674		7.34	8.26
122604B	122604A	12159		7.17	9.00
122604C	122604A	30071		6.59	9.00
200605161528A	200605161039A	17342		6.85	7.44
200611151140A	200611151114A	1598		6.69	8.30
200612261234A	200612261226A	472		6.92	6.98
200703250108A	200703250040A	1698		6.89	7.13
200704012111A	200704012039A	1897		6.87	8.06
200709130230A	200709122348A	9660		6.55	7.87
200709130335A	200709122348A	13585		7.05	7.87
200709300947A	200709300523A	15858		6.60	7.40
200802251806A	200802250836A	34170		6.61	7.19
200809110020A	200809110000A	1248		6.77	6.58
200901032023A	200901031943A	2370		6.58	7.66
200901032233A	200901031943A	10190		7.37	7.66
200910072218A	200910072203A	937		7.82	7.61
200910072250A	200910072218A	1884		6.80	7.82
200910072313A	200910072218A	3297		7.41	7.82
200910080828A	200910072313A	33300		6.74	7.41
201001032236A	201001032148A	2903		7.11	6.63
201002270801A	201002270634A	5228		7.36	8.78
201003111455A	201003111439A	943		6.96	6.85
201006160358A	201006160316A	2501		6.55	7.00
201007181335A	201007181304A	1850		7.32	6.92
201007240535A	201007232251A	24229		6.57	7.64
201102101441A	201102101439A	151		6.51	6.52
201103110615A	201103110546A	1762		7.89	9.08
201103110625A	201103110546A	2367		7.59	9.08
201108201713A	201108201655A	1084		6.54	7.13
201108201819A	201108201655A	5061		7.04	7.13
201204111043A	201204110838A	7474		8.25	8.58

Table S1. List of disturbed events. O.T. is the origin time difference between the disturbed event and the disturbing earthquake. The disturbed events are ordered chronologically.

Event-id	Date	Mw	WCMT τ_c	GCMT τ_c
020890A	1990/02/08	6.7	7.9	3.7
021990B	1990/02/19	6.7	9.1	7.8
030390B	1990/03/03	7.7	24.9	15.7
030590A	1990/03/05	7.0	14.4	9.2
032190A	1990/03/21	6.7	9.2	11.4
032590D	1990/03/25	7.2	16.3	12.2
040390C	1990/04/03	6.7	17.7	15.5
040590C	1990/04/05	7.4	24.1	10.9
041890B	1990/04/18	7.7	16.2	16.8
050190B	1990/05/01	6.5	5.6	6.8
051290A	1990/05/12	7.2	3.3	7.9
052090A	1990/05/20	7.2	11.1	5.9
052490B	1990/05/24	7.0	11.8	13.5
053090A	1990/05/30	6.6	9.1	6.4
053090C	1990/05/30	6.9	3.1	6.6
061490B	1990/06/14	7.1	11.9	11.9
062090B	1990/06/20	7.4	29.5	21.1
062390B	1990/06/23	6.8	11.0	10.7
071490B	1990/07/14	6.6	6.8	7.7
071690A	1990/07/16	7.7	17.8	18.2
072790B	1990/07/27	7.2	12.9	7.8
081290C	1990/08/12	7.0	16.8	12.8
081790A	1990/08/17	6.5	2.2	5.1
092390C	1990/09/23	6.5	8.2	7.8
092890B	1990/09/28	6.6	8.8	8.2
101590A	1990/10/15	6.8	4.1	5.3
101790B	1990/10/17	7.0	11.7	9.0
110690C	1990/11/06	6.5	7.9	7.1
110690D	1990/11/06	7.1	8.2	10.2
111590A	1990/11/15	6.7	6.5	6.8
123090D	1990/12/30	7.5	14.8	17.3
010591A	1991/01/05	7.0	11.9	12.8
013191B	1991/01/31	6.9	8.5	12.2
020991C	1991/02/09	6.9	11.9	13.8
021891A	1991/02/18	6.7	12.5	10.0
022191A	1991/02/21	6.6	4.3	6.2
030891B	1991/03/08	6.6	10.5	7.6
040591A	1991/04/05	6.9	16.9	16.3
040691B	1991/04/06	6.7	11.2	7.5
042291A	1991/04/22	7.5	18.1	20.5
042991B	1991/04/29	6.9	9.1	11.8

Table S2. Centroid time-delay estimates from WCMT and GCMT catalogs.

Event-id	Date	Mw	WCMT τ_c	GCMT τ_c
050391A	1991/05/03	6.7	7.6	8.8
051991A	1991/05/19	6.8	5.4	11.3
052191A	1991/05/21	6.5	2.9	6.4
052491B	1991/05/24	6.9	3.6	7.2
053091B	1991/05/30	6.7	10.0	5.5
060791C	1991/06/07	6.8	9.6	9.9
060991C	1991/06/09	7.0	8.5	8.8
061591B	1991/06/15	6.5	2.4	2.1
062091C	1991/06/20	7.3	9.0	8.2
062391G	1991/06/23	7.2	16.8	14.5
070491F	1991/07/04	6.7	7.6	5.1
070691A	1991/07/06	6.8	9.1	6.0
071391A	1991/07/13	6.8	10.8	6.1
071491A	1991/07/14	6.6	2.1	3.2
080891A	1991/08/08	6.7	9.9	12.9
081491D	1991/08/14	6.5	8.6	3.7
081791H	1991/08/17	7.0	14.1	6.1
092891E	1991/09/28	6.6	8.7	9.7
093091A	1991/09/30	6.9	7.9	7.6
101491C	1991/10/14	7.1	15.6	12.4
101991G	1991/10/19	6.7	10.2	7.3
110191B	1991/11/01	6.6	16.0	8.3
111391C	1991/11/13	6.8	8.7	6.2
111991G	1991/11/19	7.2	13.7	10.0
121391B	1991/12/13	6.6	8.3	9.2
121991A	1991/12/19	6.7	8.0	6.9
122291B	1991/12/22	7.5	15.9	17.3
122791C	1991/12/27	7.2	10.2	13.6
122891A	1991/12/28	6.7	9.5	11.1
012092C	1992/01/20	6.6	5.0	7.6
021392A	1992/02/13	6.8	16.0	10.3
022792D	1992/02/27	6.6	11.0	10.2
030292E	1992/03/02	6.9	9.6	7.7
031392D	1992/03/13	6.7	5.1	6.4
040692C	1992/04/06	6.8	13.3	8.6
041892A	1992/04/18	6.6	14.8	8.2
042592E	1992/04/25	7.0	11.0	7.6
042692D	1992/04/26	6.7	8.9	4.7
051292D	1992/05/12	6.7	12.8	10.1
051592D	1992/05/15	7.3	12.4	12.6

Table S2. (continued)

Event-id	Date	Mw	WCMT τ_c	GCMT τ_c
051792B	1992/05/17	7.1	11.6	10.3
052592D	1992/05/25	6.8	8.2	6.9
052792A	1992/05/27	7.0	10.0	7.3
062892C	1992/06/28	7.3	21.2	18.9
071092A	1992/07/10	6.5	9.4	8.7
071192A	1992/07/11	7.2	17.1	12.9
071892F	1992/07/18	6.8	9.4	5.7
072092B	1992/07/20	6.7	10.9	13.2
080292B	1992/08/02	6.6	0.8	4.5
080792E	1992/08/07	6.8	7.9	5.5
081992B	1992/08/19	7.2	6.1	8.4
082892G	1992/08/28	6.8	3.9	5.3
090292A	1992/09/02	7.7	47.8	40.3
092692E	1992/09/26	6.6	2.7	5.6
093092C	1992/09/30	6.6	10.0	5.9
101192C	1992/10/11	7.4	14.9	11.6
101592D	1992/10/15	6.9	15.2	12.2
101792E	1992/10/17	6.7	14.4	7.7
101892G	1992/10/18	7.1	14.2	10.7
102292B	1992/10/22	6.4	10.5	7.4
102492B	1992/10/24	6.6	18.2	13.6
110892B	1992/11/08	6.7	9.0	10.1
112192H	1992/11/21	6.7	4.1	9.2
121292B	1992/12/12	7.8	23.1	23.6
122092I	1992/12/20	7.2	13.2	13.3
122692I	1992/12/26	6.8	17.8	21.0
011093A	1993/01/10	6.7	5.7	9.2
011593C	1993/01/15	7.6	9.1	9.7
030693B	1993/03/06	7.2	11.7	10.1
030693K	1993/03/06	6.6	6.0	4.4
041693E	1993/04/16	6.9	7.9	7.8
041993A	1993/04/19	6.7	6.6	8.6
051193E	1993/05/11	7.0	8.9	8.4
051393C	1993/05/13	6.9	10.9	7.2
051593M	1993/05/15	6.9	13.1	9.5
051693I	1993/05/16	6.6	13.1	10.0
051893F	1993/05/18	6.7	7.3	8.5
052493E	1993/05/24	7.0	4.9	7.9
060893D	1993/06/08	7.6	21.1	20.9
061893E	1993/06/18	6.6	3.0	5.9

Table S2. (continued)

Event-id	Date	Mw	WCMT τ_c	GCMT τ_c
061893H	1993/06/18	6.7	10.9	10.9
063093A	1993/06/30	6.7	15.0	8.6
071193A	1993/07/11	6.7	16.0	10.8
071293B	1993/07/12	7.7	26.9	24.9
080793E	1993/08/07	6.7	11.8	9.9
080893B	1993/08/08	7.8	21.1	24.4
080993G	1993/08/09	7.0	6.5	10.1
081093A	1993/08/10	7.1	14.4	10.6
090393C	1993/09/03	6.7	10.2	5.4
090693A	1993/09/06	6.6	6.2	7.2
091093F	1993/09/10	7.2	14.2	8.6
092793C	1993/09/27	6.6	6.9	6.8
101193D	1993/10/11	6.8	4.2	6.5
101393C	1993/10/13	6.8	9.8	8.5
101393D	1993/10/13	6.3	3.7	6.0
102493C	1993/10/24	6.5	12.8	7.0
102593F	1993/10/25	6.7	10.0	8.1
111393B	1993/11/13	7.0	12.0	12.1
120993A	1993/12/09	6.9	11.7	8.7
120993C	1993/12/09	6.7	12.8	9.9
122993A	1993/12/29	7.0	12.2	10.2
011094C	1994/01/10	6.9	9.5	8.6
011794B	1994/01/17	6.7	12.9	8.1
011994B	1994/01/19	6.8	8.1	9.2
012194A	1994/01/21	6.9	7.3	7.3
021194C	1994/02/11	6.8	8.4	8.7
021294B	1994/02/12	6.7	11.1	7.1
021294F	1994/02/12	7.0	15.0	12.9
021594E	1994/02/15	6.8	8.0	7.9
030994E	1994/03/09	7.6	10.9	10.9
031494A	1994/03/14	7.1	20.0	25.4
031494C	1994/03/14	6.8	8.4	7.5
041894B	1994/04/18	6.7	11.2	9.4
042194B	1994/04/21	6.7	12.2	10.1
042994A	1994/04/29	6.9	10.6	6.6
051094C	1994/05/10	6.9	7.5	5.8
060294C	1994/06/02	7.8	40.8	41.8
060394F	1994/06/03	6.5	4.4	7.4
060694J	1994/06/06	6.8	10.3	6.9
060994A	1994/06/09	8.2	30.2	29.2

Table S2. (continued)

Event-id	Date	Mw	WCMT τ_c	GCMT τ_c
061894B	1994/06/18	6.8	12.1	9.4
071394B	1994/07/13	7.1	12.8	13.3
072194D	1994/07/21	7.3	7.0	7.8
081894F	1994/08/18	6.4	8.2	6.7
082894H	1994/08/28	6.6	9.0	8.9
090194F	1994/09/01	7.0	12.1	7.5
091694A	1994/09/16	6.6	6.4	4.4
092894B	1994/09/28	6.6	5.5	5.7
100494B	1994/10/04	8.3	29.5	32.7
100894E	1994/10/08	6.8	5.9	6.3
100994B	1994/10/09	7.2	8.4	9.8
101694C	1994/10/16	6.7	6.4	5.7
102794C	1994/10/27	6.7	10.6	8.7
111494C	1994/11/14	7.1	12.0	8.4
122894C	1994/12/28	7.7	35.6	36.1
010695F	1995/01/06	7.0	8.6	8.3
011695D	1995/01/16	6.9	8.0	7.3
011995F	1995/01/19	6.6	8.2	7.3
012795G	1995/01/27	6.7	11.5	13.0
020595D	1995/02/05	7.2	13.3	8.2
021395K	1995/02/13	6.7	3.5	6.3
021995C	1995/02/19	6.6	11.0	5.0
031995G	1995/03/19	6.8	5.6	6.9
040795E	1995/04/07	7.4	19.1	16.6
041795F	1995/04/17	6.7	9.4	9.1
042195B	1995/04/21	6.8	9.1	7.1
042395C	1995/04/23	6.7	8.2	5.5
042895D	1995/04/28	6.9	9.0	9.3
050295B	1995/05/02	6.7	7.2	8.2
050595A	1995/05/05	7.1	16.6	13.9
051395B	1995/05/13	6.5	5.9	8.0
051495A	1995/05/14	6.8	6.9	9.7
051695F	1995/05/16	7.7	19.4	17.9
051895A	1995/05/18	6.8	8.2	9.7
052395D	1995/05/23	6.8	14.5	15.3
052795A	1995/05/27	7.0	11.9	10.6
061495B	1995/06/14	6.6	13.1	8.9
062195A	1995/06/21	6.8	11.7	8.7
062495A	1995/06/24	6.8	7.3	7.5
062995D	1995/06/29	6.6	5.7	7.0

Table S2. (continued)

Event-id	Date	Mw	WCMT τ_c	GCMT τ_c
070395D	1995/07/03	7.2	13.5	12.2
071195A	1995/07/11	6.8	10.9	10.9
073095A	1995/07/30	8.1	35.9	33.3
081495A	1995/08/14	6.7	6.8	7.4
081695D	1995/08/16	7.7	30.8	32.1
081695P	1995/08/16	7.2	20.0	19.4
081995C	1995/08/19	6.5	3.5	5.8
082395A	1995/08/23	7.0	5.8	6.6
091495C	1995/09/14	7.3	15.2	10.0
100395B	1995/10/03	6.9	14.2	12.8
100695F	1995/10/06	6.7	6.0	5.3
100995C	1995/10/09	7.9	36.8	34.9
101895B	1995/10/18	7.2	12.9	12.3
101995B	1995/10/19	6.8	11.7	10.5
102195C	1995/10/21	7.2	15.4	11.9
110195A	1995/11/01	6.7	8.6	7.9
110895A	1995/11/08	6.9	6.9	7.4
112295A	1995/11/22	7.1	15.8	14.3
112495D	1995/11/24	6.5	5.6	6.8
120195A	1995/12/01	6.7	19.8	8.1
120295A	1995/12/02	6.6	8.8	8.0
120395E	1995/12/03	7.8	26.7	27.1
122595E	1995/12/25	7.1	7.4	11.9
010196C	1996/01/01	7.7	12.1	12.3
020396B	1996/02/03	6.6	12.7	11.7
020796G	1996/02/07	7.1	10.8	10.3
021696A	1996/02/16	6.5	3.7	6.7
021696C	1996/02/16	6.7	7.0	5.4
021796B	1996/02/17	8.1	28.1	32.2
021796R	1996/02/17	6.8	15.1	3.9
021896K	1996/02/18	6.6	4.8	7.9
022196B	1996/02/21	7.5	27.0	25.7
022596A	1996/02/25	7.0	14.9	11.0
030396B	1996/03/03	6.7	11.9	9.4
030396D	1996/03/03	6.7	14.0	10.9
031696C	1996/03/16	6.6	3.0	5.7
031796A	1996/03/17	6.7	7.0	7.7
032296A	1996/03/22	6.8	10.0	8.0
041696A	1996/04/16	7.2	11.9	9.9

Table S2. (continued)

Event-id	Date	Mw	WCMT τ_c	GCMT τ_c
041996A	1996/04/19	6.6	8.9	8.9
042996A	1996/04/29	7.2	12.9	10.1
050296F	1996/05/02	6.6	8.9	8.9
060296D	1996/06/02	6.9	8.0	8.6
060996A	1996/06/09	6.5	7.9	5.8
061096A	1996/06/10	6.7	8.4	7.9
061096B	1996/06/10	7.8	29.9	27.9
061096S	1996/06/10	7.2	15.0	13.4
061196J	1996/06/11	7.1	13.0	9.9
061796A	1996/06/17	7.8	15.0	15.2
062196C	1996/06/21	6.8	10.0	8.2
071596D	1996/07/15	6.7	11.9	8.1
071696A	1996/07/16	6.5	7.7	5.7
071696C	1996/07/16	6.7	5.0	5.8
072296F	1996/07/22	7.0	10.9	12.3
080296C	1996/08/02	6.9	12.0	11.0
080596B	1996/08/05	6.7	11.9	9.4
080596G	1996/08/05	7.3	9.9	9.1
090596B	1996/09/05	7.0	21.9	12.6
090596L	1996/09/05	6.8	13.9	10.4
092096E	1996/09/20	6.5	7.9	5.9
100996B	1996/10/09	6.9	10.0	7.5
101496B	1996/10/14	6.8	12.0	12.4
101896F	1996/10/18	6.6	11.9	11.5
101996D	1996/10/19	6.6	9.9	7.3
110596B	1996/11/05	6.7	6.9	5.6
110696M	1996/11/06	6.5	8.0	8.4
111296D	1996/11/12	7.7	31.0	31.8
111996B	1996/11/19	6.8	6.9	6.2
120296D	1996/12/02	6.6	9.0	7.1
121096B	1996/12/10	6.7	6.0	7.7
011197D	1997/01/11	7.2	18.0	13.6
012397B	1997/01/23	7.1	5.9	8.9
022797E	1997/02/27	7.0	10.9	11.2
031197I	1997/03/11	6.9	13.0	10.1
032697A	1997/03/26	6.7	7.9	6.6
042197B	1997/04/21	7.8	42.0	42.3
042297C	1997/04/22	6.6	6.4	9.4
042897C	1997/04/28	6.8	11.0	11.8

Table S2. (continued)

Event-id	Date	Mw	WCMT τ_c	GCMT τ_c
050197D	1997/05/01	6.9	10.9	4.5
050397C	1997/05/03	6.9	9.0	7.8
051097C	1997/05/10	7.2	22.0	20.1
052197D	1997/05/21	6.7	7.9	8.7
052597D	1997/05/25	7.1	13.9	10.7
061097B	1997/06/10	6.5	10.0	7.8
070697A	1997/07/06	6.9	11.0	8.7
070997C	1997/07/09	6.9	9.0	10.2
071997D	1997/07/19	6.6	13.1	9.6
080897C	1997/08/08	6.6	9.1	8.7
082997C	1997/08/29	6.5	6.8	6.6
090297B	1997/09/02	6.8	8.0	10.7
090497A	1997/09/04	6.8	7.0	5.2
092097E	1997/09/20	7.0	15.1	10.8
101497A	1997/10/14	7.7	16.9	14.6
101597A	1997/10/15	7.1	11.0	9.1
102897A	1997/10/28	7.2	11.0	11.1
110897A	1997/11/08	7.4	13.0	10.8
111597D	1997/11/15	7.0	10.0	8.5
111897B	1997/11/18	6.6	14.0	11.2
112597C	1997/11/25	7.0	9.0	9.3
112897C	1997/11/28	6.6	2.0	5.3
120597C	1997/12/05	7.9	30.0	26.6
121797A	1997/12/17	6.7	8.0	6.8
122297A	1997/12/22	7.1	12.4	11.7
010498A	1998/01/04	7.6	29.0	26.5
011098D	1998/01/10	6.6	15.0	8.6
011298G	1998/01/12	6.6	10.0	8.2
011298J	1998/01/12	6.7	9.0	8.7
011498E	1998/01/14	6.5	6.0	5.6
013098B	1998/01/30	7.0	13.0	11.7
021698C	1998/02/16	6.7	7.0	7.5
031498F	1998/03/14	6.6	8.9	7.2
032098D	1998/03/20	6.7	13.0	11.7
032598B	1998/03/25	8.1	40.6	37.4
032998D	1998/03/29	7.1	8.0	7.1
040198A	1998/04/01	7.0	15.0	8.4
040198D	1998/04/01	6.7	11.3	9.0
040398E	1998/04/03	6.6	7.0	8.2

Table S2. (continued)

Event-id	Date	Mw	WCMT τ_c	GCMT τ_c
050398D	1998/05/03	7.5	17.0	15.8
051398C	1998/05/13	6.6	12.0	9.8
051698B	1998/05/16	6.8	7.9	7.0
052198B	1998/05/21	6.7	6.4	5.3
052298A	1998/05/22	6.6	12.0	12.1
053098A	1998/05/30	6.5	8.1	8.0
070998D	1998/07/09	6.9	11.0	9.2
071698C	1998/07/16	7.0	7.0	5.9
071798D	1998/07/17	7.1	20.0	19.3
072998C	1998/07/29	6.6	6.0	8.0
080498H	1998/08/04	7.1	13.0	9.1
082098B	1998/08/20	7.1	15.0	14.7
082398C	1998/08/23	6.7	7.0	1.2
090298A	1998/09/02	6.8	6.0	5.1
090398F	1998/09/03	6.5	8.0	7.0
092898D	1998/09/28	6.6	3.0	6.3
110998B	1998/11/09	6.6	4.0	7.1
112998B	1998/11/29	7.6	13.0	13.1
120698A	1998/12/06	6.5	8.9	7.5
122798A	1998/12/27	6.8	10.0	7.1
011999A	1999/01/19	7.0	11.0	9.6
012899B	1999/01/28	6.6	4.0	3.4
020699C	1999/02/06	7.3	11.0	9.6
030499A	1999/03/04	6.5	8.0	7.7
030499H	1999/03/04	7.0	10.0	9.2
030899C	1999/03/08	6.8	7.0	2.6
032099A	1999/03/20	6.9	9.0	6.8
032899F	1999/03/28	6.4	10.0	7.1
040399C	1999/04/03	6.8	6.0	5.9
040599A	1999/04/05	7.4	15.0	12.7
040899B	1999/04/08	7.1	5.0	6.1
041399B	1999/04/13	6.8	10.0	6.0
051099C	1999/05/10	7.1	9.0	7.4
051699A	1999/05/16	7.1	13.0	11.6
051799B	1999/05/17	6.6	5.0	5.5
061599F	1999/06/15	6.9	8.0	7.1
071199B	1999/07/11	6.7	11.0	8.1
081799A	1999/08/17	7.5	12.0	11.0
082099C	1999/08/20	6.9	10.7	9.9
082299C	1999/08/22	6.5	6.6	3.7

Table S2. (continued)

Event-id	Date	Mw	WCMT τ_c	GCMT τ_c
092099D	1999/09/20	7.6	17.0	16.8
093099E	1999/09/30	7.4	9.0	7.5
101699C	1999/10/16	7.1	19.0	15.1
111299D	1999/11/12	7.1	8.9	8.1
111599D	1999/11/15	7.0	9.0	8.8
111799A	1999/11/17	7.0	15.0	14.6
111999E	1999/11/19	7.0	15.1	15.8
112699G	1999/11/26	7.4	32.0	29.7
113099A	1999/11/30	6.6	4.0	6.6
120699B	1999/12/06	7.0	9.0	5.7
121199G	1999/12/11	7.1	11.1	9.1
122999C	1999/12/29	7.0	22.0	21.5
010800G	2000/01/08	7.2	12.0	9.6
012800B	2000/01/28	6.7	6.0	5.0
020600C	2000/02/06	6.6	11.0	9.4
022500B	2000/02/25	7.1	12.0	6.6
030300D	2000/03/03	6.6	8.0	9.2
032800C	2000/03/28	7.6	7.0	8.8
042300B	2000/04/23	6.9	6.0	6.1
050400A	2000/05/04	7.5	19.0	17.2
051200C	2000/05/12	7.2	8.0	10.8
060400D	2000/06/04	8.1	30.0	20.3
060700D	2000/06/07	6.7	9.0	8.2
061100C	2000/06/11	6.6	12.0	9.9
061700B	2000/06/17	6.5	10.0	9.0
061800A	2000/06/18	7.8	14.0	14.3
071600B	2000/07/16	6.5	9.0	9.4
080300A	2000/08/03	6.6	11.0	9.6
080400G	2000/08/04	6.8	13.0	9.4
080600B	2000/08/06	7.3	9.0	10.7
080900C	2000/08/09	6.5	9.0	5.0
081500C	2000/08/15	6.6	10.0	7.3
082800E	2000/08/28	6.7	5.0	7.7
100400G	2000/10/04	6.8	11.0	8.1
100600A	2000/10/06	6.6	13.9	6.2
102500D	2000/10/25	6.8	15.0	8.1
102900C	2000/10/29	6.9	12.0	10.9
110700A	2000/11/07	6.8	9.0	9.3
110800A	2000/11/08	6.5	16.0	16.8
111600B	2000/11/16	8.0	43.0	39.8

Table S2. (continued)

Event-id	Date	Mw	WCMT τ_c	GCMT τ_c
111700Q	2000/11/17	7.5	24.0	23.6
111800H	2000/11/18	6.8	10.9	11.8
112500D	2000/11/25	6.5	4.0	8.5
120600C	2000/12/06	7.0	9.0	8.3
121800A	2000/12/18	6.5	7.0	6.7
122000H	2000/12/20	6.6	7.4	6.9
010101B	2001/01/01	7.5	22.0	19.8
010901G	2001/01/09	7.0	11.0	9.9
011001E	2001/01/10	6.9	13.0	10.3
011301C	2001/01/13	7.7	16.0	13.4
011601D	2001/01/16	6.8	8.0	4.5
012601A	2001/01/26	7.6	11.0	14.4
021301B	2001/02/13	6.5	12.0	10.6
021301D	2001/02/13	7.4	21.0	14.8
022401A	2001/02/24	7.0	10.0	9.1
022801E	2001/02/28	6.8	14.1	13.2
022801L	2001/02/28	6.8	7.0	4.5
032401C	2001/03/24	6.8	10.0	8.6
040901A	2001/04/09	6.8	14.0	8.2
041901I	2001/04/19	6.6	9.0	8.3
042801B	2001/04/28	6.8	10.0	8.5
052501B	2001/05/25	6.6	9.0	7.0
060301A	2001/06/03	7.1	15.0	12.5
062301E	2001/06/23	8.4	67.0	69.2
062601D	2001/06/26	6.7	8.0	8.7
070501K	2001/07/05	6.5	3.0	5.0
070701F	2001/07/07	7.6	19.0	18.3
072801A	2001/07/28	6.7	8.2	7.4
080601B	2001/08/06	6.8	16.0	13.7
082101B	2001/08/21	7.2	10.9	8.1
101201E	2001/10/12	6.9	5.0	6.5
101901A	2001/10/19	7.5	14.0	13.5
102101A	2001/10/21	6.8	15.0	5.5
103101C	2001/10/31	7.0	13.0	12.6
111401B	2001/11/14	7.9	66.0	65.9
121201C	2001/12/12	7.1	12.0	14.8
121801C	2001/12/18	6.8	10.0	6.2
122301F	2001/12/23	6.8	9.0	7.4
010202F	2002/01/02	7.2	20.0	17.5
010302H	2002/01/03	6.7	17.0	13.3
011002D	2002/01/10	6.7	7.0	8.4

Table S2. (continued)

Event-id	Date	Mw	WCMT τ_c	GCMT τ_c
020502B	2002/02/05	6.6	13.0	11.9
030302C	2002/03/03	7.3	12.0	10.5
030502H	2002/03/05	7.4	17.0	14.2
033102A	2002/03/31	7.0	12.0	9.5
041802B	2002/04/18	6.5	35.0	29.5
041802F	2002/04/18	6.6	8.0	6.1
042602G	2002/04/26	7.0	7.0	6.9
061302A	2002/06/13	6.6	11.0	13.2
061702H	2002/06/17	6.7	12.0	11.0
062202B	2002/06/22	6.4	4.0	7.5
062802B	2002/06/28	7.3	8.0	9.8
081402E	2002/08/14	6.4	7.3	6.1
081902A	2002/08/19	7.6	16.0	13.4
090802H	2002/09/08	7.5	14.0	14.6
101002E	2002/10/10	7.7	28.0	21.3
101202H	2002/10/12	6.9	5.0	7.0
102302E	2002/10/23	6.6	6.0	5.3
110202B	2002/11/02	7.3	19.0	15.2
110302J	2002/11/03	7.9	48.0	47.0
110702B	2002/11/07	6.6	7.5	6.9
111502B	2002/11/15	6.7	12.0	10.1
111702C	2002/11/17	7.3	5.0	6.9
121202C	2002/12/12	6.6	10.0	8.8
011003C	2003/01/10	6.6	3.0	2.5
012003B	2003/01/20	7.3	9.0	10.0
012203A	2003/01/22	7.4	19.0	14.3
021903C	2003/02/19	6.6	11.0	7.5
031103A	2003/03/11	6.8	15.1	13.8
031703E	2003/03/17	7.0	9.0	9.3
041703C	2003/04/17	6.6	19.0	18.6
050403A	2003/05/04	6.7	10.0	4.1
051403B	2003/05/14	6.6	2.0	3.7
052103H	2003/05/21	6.8	10.0	10.2
052603A	2003/05/26	7.0	6.0	5.4
052603D	2003/05/26	6.9	11.0	10.5
052603E	2003/05/26	6.9	7.0	6.0
060703A	2003/06/07	6.6	8.1	6.1
061503B	2003/06/15	6.5	7.0	7.2
061603C	2003/06/16	6.9	8.0	7.0
062003D	2003/06/20	7.0	7.4	8.4
062303A	2003/06/23	6.8	9.0	8.6

Table S2. (continued)

Event-id	Date	Mw	WCMT τ_c	GCMT τ_c
071503F	2003/07/15	7.6	45.0	47.1
072703A	2003/07/27	6.6	6.0	4.0
072703C	2003/07/27	6.7	3.0	4.2
080403C	2003/08/04	7.5	18.0	22.4
082103D	2003/08/21	7.3	12.0	9.8
092103B	2003/09/21	6.6	12.0	9.1
092503C	2003/09/25	8.2	28.0	31.9
092703F	2003/09/27	7.2	12.0	11.2
100103B	2003/10/01	6.6	4.0	4.7
100803A	2003/10/08	6.7	7.0	6.5
103103A	2003/10/31	6.9	13.0	12.7
110603C	2003/11/06	6.5	9.3	5.4
110903F	2003/11/09	6.7	12.0	15.4
111703B	2003/11/17	7.7	22.0	24.2
112503E	2003/11/25	6.7	11.0	10.7
120503F	2003/12/05	6.6	8.0	9.4
121003B	2003/12/10	6.8	14.0	9.2
122103B	2003/12/21	6.6	19.0	20.3
122203C	2003/12/22	6.5	12.0	10.3
122603B	2003/12/26	6.6	8.1	5.7
122603I	2003/12/26	6.7	15.0	13.6
122703G	2003/12/27	7.3	25.1	22.4
122703K	2003/12/27	6.7	15.0	11.8
010304J	2004/01/03	7.1	13.0	9.7
012504B	2004/01/25	6.7	8.0	5.3
012804H	2004/01/28	6.6	4.0	3.3
020504B	2004/02/05	7.0	13.0	9.9
020704A	2004/02/07	7.2	9.0	8.5
020804C	2004/02/08	6.7	5.0	3.0
022104A	2004/02/21	6.7	9.0	9.1
042304A	2004/04/23	6.7	5.0	2.8
050304A	2004/05/03	6.6	11.0	4.9
061004H	2004/06/10	6.9	5.0	2.6
062804C	2004/06/28	6.7	12.0	5.2
071504C	2004/07/15	7.0	8.0	4.8
072504B	2004/07/25	7.3	8.0	6.4
082804C	2004/08/28	6.5	12.3	9.8
090504A	2004/09/05	7.2	10.0	8.2
090504D	2004/09/05	7.4	26.0	24.6
090604C	2004/09/06	6.8	7.4	8.2
090604M	2004/09/06	6.6	9.0	7.9

Table S2. (continued)

Event-id	Date	Mw	WCMT τ_c	GCMT τ_c
100804B	2004/10/08	6.7	5.0	3.9
100904E	2004/10/09	6.9	13.0	8.5
101504A	2004/10/15	6.6	6.0	4.7
102304D	2004/10/23	6.5	7.8	3.9
110204F	2004/11/02	6.6	11.0	3.7
110904F	2004/11/09	6.9	10.9	8.7
111104I	2004/11/11	6.6	8.0	7.3
111104M	2004/11/11	7.5	16.1	16.8
111504C	2004/11/15	7.1	10.0	5.0
111704G	2004/11/17	6.5	7.0	6.3
112204C	2004/11/22	7.1	14.0	11.1
112604A	2004/11/26	7.1	11.0	8.9
112804B	2004/11/28	6.6	20.0	13.3
112804I	2004/11/28	7.0	6.0	4.8
120604A	2004/12/06	6.7	5.0	3.2
121404B	2004/12/14	6.8	6.0	6.1
122304A	2004/12/23	8.1	29.0	26.5
122604A	2004/12/26	9.2	141.6	135.5
200501010625A	2005/01/01	6.7	12.0	3.5
200501120840A	2005/01/12	6.9	16.1	18.7
200501162017A	2005/01/16	6.6	7.1	5.9
200501190611A	2005/01/19	6.6	14.0	11.7
200502050334A	2005/02/05	6.6	3.0	6.2
200502051223A	2005/02/05	7.1	6.0	4.7
200502081448A	2005/02/08	6.7	6.0	4.8
200502151442A	2005/02/15	6.5	6.0	6.4
200502162027A	2005/02/16	6.7	3.0	15.2
200502261256A	2005/02/26	6.6	9.0	5.5
200503021042A	2005/03/02	7.1	3.0	4.7
200503200153A	2005/03/20	6.6	11.0	5.4
200503211223A	2005/03/21	6.8	4.0	4.3
200503281609A	2005/03/28	8.5	57.0	55.0
200504101029A	2005/04/10	6.8	10.0	6.5
200504111220A	2005/04/11	6.6	9.0	7.5
200504111708A	2005/04/11	6.7	7.0	5.4
200505140505A	2005/05/14	6.8	10.0	6.2
200505160354A	2005/05/16	6.6	13.0	5.7
200505190154A	2005/05/19	6.9	12.9	9.7
200506132244A	2005/06/13	7.8	6.0	6.3
200506141710A	2005/06/14	6.7	6.3	5.7
200506150250A	2005/06/15	7.2	17.0	11.2

Table S2. (continued)

Event-id	Date	Mw	WCMT τ_c	GCMT τ_c
200506170621A	2005/06/17	6.6	6.7	2.7
200507020216A	2005/07/02	6.6	15.0	11.5
200507050152A	2005/07/05	6.5	11.1	3.3
200507241542A	2005/07/24	7.2	10.0	9.9
200508160246A	2005/08/16	7.1	13.0	11.9
200509090726A	2005/09/09	7.7	30.0	29.1
200509260155A	2005/09/26	7.5	8.0	6.3
200509291550A	2005/09/29	6.7	9.0	8.8
200510080350A	2005/10/08	7.6	13.0	10.7
200511142138A	2005/11/14	7.0	8.0	7.9
200511171926A	2005/11/17	6.8	3.9	5.5
200512051219A	2005/12/05	6.7	8.0	7.7
200512111420A	2005/12/11	6.6	7.8	7.2
200512122147A	2005/12/12	6.5	1.0	2.3
200512130316A	2005/12/13	6.7	9.0	6.5
200601020610A	2006/01/02	7.4	10.4	13.6
200601022213A	2006/01/02	7.2	9.0	4.0
200601040832A	2006/01/04	6.7	12.0	4.9
200601081134A	2006/01/08	6.7	6.0	4.7
200601271658A	2006/01/27	7.7	10.0	11.1
200602021248A	2006/02/02	6.7	7.0	4.6
200602222219A	2006/02/22	7.0	6.0	7.2
200603140657A	2006/03/14	6.7	3.0	3.6
200603311321A	2006/03/31	6.5	12.2	9.0
200604202325A	2006/04/20	7.6	16.1	15.4
200604291658A	2006/04/29	6.5	8.0	6.9
200604301917A	2006/04/30	6.6	13.2	10.4
200605031527A	2006/05/03	8.0	29.0	23.4
200605161039A	2006/05/16	7.4	15.0	13.0
200605221112A	2006/05/22	6.5	7.6	5.0
200607082039A	2006/07/08	6.6	8.0	6.4
200607170819A	2006/07/17	7.7	76.1	71.7
200608072218A	2006/08/07	6.8	5.9	6.1
200608200341A	2006/08/20	7.0	7.5	8.3
200608250044A	2006/08/25	6.6	2.0	5.3
200609011018A	2006/09/01	6.7	7.0	7.7
200609280622A	2006/09/28	6.9	11.0	6.9
200609301750A	2006/09/30	6.5	8.0	7.3
200610010906A	2006/10/01	6.5	8.0	7.2
200610151707A	2006/10/15	6.7	6.0	5.9
200610170125A	2006/10/17	6.7	9.0	6.8

Table S2. (continued)

Event-id	Date	Mw	WCMT τ_c	GCMT τ_c
200610201048A	2006/10/20	6.7	9.0	7.8
200611071738A	2006/11/07	6.6	14.8	10.9
200611130126A	2006/11/13	6.8	7.3	9.2
200611151114A	2006/11/15	8.3	54.2	54.4
200612261226A	2006/12/26	7.0	10.0	7.9
200612300830A	2006/12/30	6.7	14.0	10.9
200701130423A	2007/01/13	8.0	23.0	26.9
200701211127A	2007/01/21	7.5	19.0	16.0
200701300454A	2007/01/30	6.9	12.0	5.8
200701302137A	2007/01/30	6.6	5.4	6.0
200701310315A	2007/01/31	6.5	12.0	9.2
200702200804A	2007/02/20	6.7	3.8	6.0
200703250040A	2007/03/25	7.2	15.0	11.3
200703250041A	2007/03/25	6.7	9.0	5.6
200704012039A	2007/04/01	8.1	43.7	40.1
200706131929A	2007/06/13	6.7	9.0	7.2
200706280252A	2007/06/28	6.6	2.6	4.5
200707160113A	2007/07/16	6.6	8.0	7.2
200707161417A	2007/07/16	6.8	4.0	4.7
200707260540A	2007/07/26	7.0	10.0	7.9
200708011708A	2007/08/01	7.2	13.0	12.1
200708020321A	2007/08/02	6.7	10.7	8.5
200708081704A	2007/08/08	7.5	7.9	6.4
200708152340A	2007/08/15	8.2	62.0	60.1
200708202242A	2007/08/20	6.5	4.7	7.0
200709020105A	2007/09/02	7.3	12.4	10.3
200709100149A	2007/09/10	6.7	7.4	9.3
200709121110A	2007/09/12	8.3	51.0	48.8
200709122348A	2007/09/12	7.8	33.0	31.5
200709200831A	2007/09/20	6.6	13.0	10.3
200709261236A	2007/09/26	6.7	11.4	10.6
200709281338A	2007/09/28	7.4	5.6	6.0
200709300208A	2007/09/30	6.9	7.4	9.4
200709300523A	2007/09/30	7.4	20.0	17.4
200710151229A	2007/10/15	6.8	10.1	10.7
200710162105A	2007/10/16	6.6	4.0	3.5
200710242102A	2007/10/24	6.8	10.6	7.2
200710310330A	2007/10/31	7.2	8.7	9.6
200711100113A	2007/11/10	6.6	13.1	14.6
200711141540A	2007/11/14	7.8	26.0	20.7

Table S2. (continued)

Event-id	Date	Mw	WCMT τ_c	GCMT τ_c
200711151506A	2007/11/15	6.9	12.9	11.4
200711160312A	2007/11/16	6.8	5.0	4.8
200711220848A	2007/11/22	6.7	12.0	11.6
200711271150A	2007/11/27	6.5	6.8	5.5
200711291900A	2007/11/29	7.4	10.2	12.2
200712090728A	2007/12/09	7.8	19.0	17.1
200712160809A	2007/12/16	6.7	5.0	3.9
200712190930A	2007/12/19	7.1	10.4	9.4
200712200755A	2007/12/20	6.6	9.0	7.0
200801051101A	2008/01/05	6.6	12.2	5.3
200801151752A	2008/01/15	6.5	6.0	5.0
200802080938A	2008/02/08	7.0	6.0	8.7
200802101222A	2008/02/10	6.6	5.0	5.8
200802141009A	2008/02/14	6.8	10.0	6.3
200802141208A	2008/02/14	6.4	55.0	6.9
200802200808A	2008/02/20	7.4	19.0	14.8
200802231557A	2008/02/23	6.8	6.1	8.3
200802250836A	2008/02/25	7.1	14.0	9.4
200802252102A	2008/02/25	6.7	7.0	4.6
200803031411A	2008/03/03	6.8	9.0	6.9
200803202233A	2008/03/20	7.0	15.0	14.2
200804091246A	2008/04/09	7.3	13.9	11.0
200804120030A	2008/04/12	7.0	12.0	8.6
200804160554A	2008/04/16	6.5	7.0	5.0
200805020133A	2008/05/02	6.6	4.0	2.4
200805071645A	2008/05/07	6.8	8.6	8.4
200805092151A	2008/05/09	6.7	5.0	6.1
200805120628A	2008/05/12	8.0	37.0	38.9
200806132343A	2008/06/13	6.8	9.0	7.8
200806271140A	2008/06/27	6.5	8.0	5.2
200806300617A	2008/06/30	7.0	8.9	8.6
200807050212A	2008/07/05	7.7	12.0	9.7
200807190239A	2008/07/19	6.9	6.0	6.1
200807190927A	2008/07/19	6.6	7.0	6.2
200807231526A	2008/07/23	6.8	1.1	4.1
200808251322A	2008/08/25	6.6	9.0	9.7
200809081852A	2008/09/08	6.9	8.0	7.4
200809101308A	2008/09/10	6.6	4.2	6.9
200809110000A	2008/09/11	6.5	2.0	4.1
200809291519A	2008/09/29	7.0	14.0	11.3
200810051552A	2008/10/05	6.6	9.0	11.7

Table S2. (continued)

Event-id	Date	Mw	WCMT τ_c	GCMT τ_c
200810161941A	2008/10/16	6.6	9.0	5.6
200810190510A	2008/10/19	6.9	9.0	6.6
200811161702A	2008/11/16	7.3	11.0	11.1
200811240902A	2008/11/24	7.3	9.0	10.7
200812090624A	2008/12/09	6.8	11.1	7.2
200901031943A	2009/01/03	7.6	18.1	18.4
200901150727A	2009/01/15	6.5	8.0	7.5
200901151749A	2009/01/15	7.4	10.0	9.2
200901190335A	2009/01/19	6.5	9.0	8.0
200902111734A	2009/02/11	7.1	12.3	10.8
200902182153A	2009/02/18	6.9	11.0	5.0
200903191817A	2009/03/19	7.6	17.4	12.8
200904070423A	2009/04/07	6.9	7.0	7.8
200904161457A	2009/04/16	6.7	9.0	10.0
200904181917A	2009/04/18	6.6	8.0	7.1
200905160053A	2009/05/16	6.5	11.4	6.5
200905280824A	2009/05/28	7.3	20.5	18.3
200906231419A	2009/06/23	6.7	5.0	7.3
200907150922A	2009/07/15	7.8	23.0	20.6
200908031800A	2009/08/03	6.9	16.0	10.3
200908091055A	2009/08/09	7.1	3.5	3.7
200908100406A	2009/08/10	6.5	10.4	8.7
200908101955A	2009/08/10	7.5	24.9	26.3
200908122248A	2009/08/12	6.5	5.0	4.5
200908160738A	2009/08/16	6.7	9.0	6.9
200908170005A	2009/08/17	6.6	8.0	4.1
200908280151A	2009/08/28	6.8	3.0	5.5
200908301451A	2009/08/30	6.5	7.0	7.6
200909020755A	2009/09/02	7.0	7.0	6.4
200909291748A	2009/09/29	8.1	24.0	15.8
200909301016A	2009/09/30	7.5	8.0	8.1
200910010152A	2009/10/01	6.6	9.0	7.5
200910041058A	2009/10/04	6.6	2.0	3.4
200910072141A	2009/10/07	6.7	6.0	6.4
200910072203A	2009/10/07	7.6	18.0	14.5
200910241440A	2009/10/24	6.9	6.0	7.8
200910300703A	2009/10/30	6.8	9.0	6.5
200911081941A	2009/11/08	6.7	7.0	7.4
200911091044A	2009/11/09	7.2	9.7	8.3
200911130306A	2009/11/13	6.5	8.0	7.7

Table S2. (continued)

Event-id	Date	Mw	WCMT τ_c	GCMT τ_c
200911171530A	2009/11/17	6.5	11.0	7.9
200911241247A	2009/11/24	6.7	17.0	6.3
201001032148A	2010/01/03	6.7	11.0	11.4
201001050455A	2010/01/05	6.8	6.9	7.2
201001051215A	2010/01/05	6.8	12.0	13.3
201001100027A	2010/01/10	6.5	13.0	7.5
201001122153A	2010/01/12	7.0	6.1	7.0
201002180113A	2010/02/18	6.8	3.0	3.7
201002262031A	2010/02/26	7.0	7.0	2.7
201002270634A	2010/02/27	8.8	64.1	63.0
201003051147A	2010/03/05	6.6	12.0	7.2
201003051606A	2010/03/05	6.7	7.0	7.2
201003111439A	2010/03/11	6.8	9.1	8.1
201003140808A	2010/03/14	6.5	6.0	4.3
201003160221A	2010/03/16	6.6	11.0	5.6
201003201400A	2010/03/20	6.5	4.0	3.5
201003301654A	2010/03/30	6.6	7.0	7.7
201004042240A	2010/04/04	7.3	28.9	26.1
201004062215A	2010/04/06	7.7	21.0	17.5
201004110940A	2010/04/11	6.8	8.0	8.3
201004132349A	2010/04/13	6.8	12.0	7.5
201005051629A	2010/05/05	6.6	9.0	7.8
201005090559A	2010/05/09	7.2	15.0	9.8
201005271714A	2010/05/27	7.2	11.0	8.8
201006121926A	2010/06/12	7.4	9.0	9.9
201006160316A	2010/06/16	6.9	11.9	11.8
201006260530A	2010/06/26	6.7	7.3	6.7
201007140832A	2010/07/14	6.6	11.0	6.1
201007180556A	2010/07/18	6.6	5.4	4.4
201007181304A	2010/07/18	6.9	7.0	6.7
201007232208A	2010/07/23	7.3	10.9	9.0
201007232251A	2010/07/23	7.6	12.6	8.9
201007232315A	2010/07/23	7.4	7.0	5.5
201007290731A	2010/07/29	6.6	3.6	4.4
201008042201A	2010/08/04	7.0	12.0	11.5
201008100523A	2010/08/10	7.2	12.0	8.9
201008121154A	2010/08/12	7.1	6.0	5.1
201008132119A	2010/08/13	6.9	9.0	9.2
201009031635A	2010/09/03	7.0	16.0	10.2
201009291711A	2010/09/29	6.9	5.0	6.0

Table S2. (continued)

Event-id	Date	Mw	WCMT τ_c	GCMT τ_c
201010211753A	2010/10/21	6.7	10.5	6.3
201010251442A	2010/10/25	7.8	38.0	37.4
201011300324A	2010/11/30	6.7	5.0	7.5
201012020312A	2010/12/02	6.6	10.0	9.8
201012201841A	2010/12/20	6.5	8.8	7.1
201012211719A	2010/12/21	7.3	10.0	12.9
201012251316A	2010/12/25	7.3	18.0	14.4
201101010956A	2011/01/01	7.0	7.0	5.7
201101022020A	2011/01/02	7.1	15.0	8.9
201101091003A	2011/01/09	6.5	8.0	9.3
201101122132A	2011/01/12	6.5	2.0	3.0
201101131616A	2011/01/13	7.0	12.0	9.7
201101182023A	2011/01/18	7.2	9.0	8.3
201102101439A	2011/02/10	6.6	5.0	2.5
201102112005A	2011/02/11	6.8	15.0	8.3
201102140340A	2011/02/14	6.8	12.0	5.3
201102211057A	2011/02/21	6.5	4.0	5.2
201103061432A	2011/03/06	6.6	5.0	6.0
201103090245A	2011/03/09	7.3	13.0	11.7
201103101708A	2011/03/10	6.6	2.0	1.7
201103110546A	2011/03/11	9.1	73.0	69.8
201103241355A	2011/03/24	6.8	10.0	5.7
201104032006A	2011/04/03	6.7	12.0	9.6
201104071311A	2011/04/07	6.7	5.0	5.3
201104071432A	2011/04/07	7.1	8.0	7.3
201104110816A	2011/04/11	6.6	7.0	6.8
201104181303A	2011/04/18	6.5	6.0	4.3
201104230416A	2011/04/23	6.8	7.0	6.0
201105100855A	2011/05/10	6.7	9.0	8.9
201106201635A	2011/06/20	6.5	1.0	5.2
201106222150A	2011/06/22	6.7	6.0	4.9
201106240309A	2011/06/24	7.1	13.0	12.0
201107061903A	2011/07/06	7.5	17.0	14.2
201107100057A	2011/07/10	7.0	5.0	5.5
201107112047A	2011/07/11	6.4	8.5	7.3
201107290742A	2011/07/29	6.7	6.0	5.4
201107312338A	2011/07/31	6.6	9.0	7.9
201108201655A	2011/08/20	7.2	13.0	10.3
201108241746A	2011/08/24	7.0	3.0	3.9
201108300657A	2011/08/30	6.8	5.0	6.1
201109021055A	2011/09/02	6.8	6.0	6.0

Table S2. (continued)

Event-id	Date	Mw	WCMT τ_c	GCMT τ_c
201109021347A	2011/09/02	6.7	3.0	4.9
201109032255A	2011/09/03	7.0	5.0	4.6
201109051755A	2011/09/05	6.7	2.0	3.6
201109151931A	2011/09/15	7.3	10.2	6.8
201109161926A	2011/09/16	6.7	13.0	9.6
201109181240A	2011/09/18	6.9	9.0	8.1
201110211757A	2011/10/21	7.4	15.0	12.2
201110231041A	2011/10/23	7.1	8.0	5.5
201110281854A	2011/10/28	6.8	9.0	9.1
201111080259A	2011/11/08	6.9	5.0	3.5
201111221848A	2011/11/22	6.6	2.0	2.9
201112140504A	2011/12/14	7.0	2.0	5.7
201112271521A	2011/12/27	6.6	10.0	7.0
201201010527A	2012/01/01	6.8	5.0	5.4
201201101837A	2012/01/10	7.2	15.0	14.2
201201151340A	2012/01/15	6.7	5.0	6.7
201202021334A	2012/02/02	7.0	10.0	8.5
201202060349A	2012/02/06	6.6	9.0	6.7
201202260617A	2012/02/26	6.5	5.0	4.5
201203031219A	2012/03/03	6.6	8.0	6.5
201203090709A	2012/03/09	6.6	11.0	9.4
201203140908A	2012/03/14	6.9	6.0	7.7
201203201802A	2012/03/20	7.3	13.0	7.4
201203212215A	2012/03/21	6.6	3.0	5.4
201203252237A	2012/03/25	7.1	19.0	14.9
201204110838A	2012/04/11	8.6	49.0	54.7
201204170350A	2012/04/17	6.7	12.0	8.7
201204170713A	2012/04/17	6.8	4.0	7.0
201204210116A	2012/04/21	6.6	4.0	3.6
201204281008A	2012/04/28	6.7	6.0	4.6
201205280507A	2012/05/28	6.7	6.0	3.4
201207250027A	2012/07/25	6.3	7.1	4.3
201207260533A	2012/07/26	6.7	19.0	16.5
201207282004A	2012/07/28	6.5	2.0	3.2

Table S2. (continued)

References

- Abercrombie, R.E., Antolik, M., Ekström, G., 2003. The June 2000 Mw7.9 earthquakes south of Sumatra: Deformation in the India–Australia Plate. *J. Geophys. Res.* 108, 2018.
- Abercrombie, R.E., Antolik, M., Felzer, K., Ekström, G., 2001. The 1994 Java tsunami earthquake- Slip over a subducting seamount. *J. Geophys. Res.* 106, 6595–6607.
- Antolik, M., Abercrombie, R.E., Pan, J., Ekström, G., 2006. Rupture characteristics of the 2003 Mw 7.6 mid-Indian Ocean earthquake: Implications for seismic properties of young oceanic lithosphere. *J. Geophys. Res.* 111, B04302.
- Houston, H., Benz, H.M., Vidale, J.E., 1998. Time functions of deep earthquakes from broadband and short-period stacks. *J. Geophys. Res.* 103, 29895.
- Lay, T., Ammon, C.J., Hutko, A.R., Kanamori, H., 2010a. Effects of Kinematic Constraints on Teleseismic Finite-Source Rupture Inversions: Great Peruvian Earthquakes of 23 June 2001 and 15 August 2007. *Bull. Seism. Soc. Am.* 100, 969–994.
- Lay, T., Ammon, C.J., Kanamori, H., Koper, K.D., Sufri, O., Hutko, A.R., 2010b. Teleseismic inversion for rupture process of the 27 February 2010 Chile (Mw8.8) earthquake. *Geophys. Res. Lett.* 37, L13301.
- Lay, T., Ammon, C.J., Kanamori, H., Yamazaki, Y., Cheung, K.F., Hutko, A.R., 2011. The 25 October 2010 Mentawai tsunami earthquake (Mw 7.8) and the tsunami hazard presented by shallow megathrust ruptures. *Geophys. Res. Lett.* 38, L06302.
- Lay, T., Kanamori, H., 2011. Insights from the great 2011 Japan earthquake. *Physics today* 64, 33–39.

- Lay, T., Kanamori, H., Ammon, C.J., Hutko, A.R., Furlong, K., Rivera, L., 2009. The 2006-2007 Kuril Islands great earthquake sequence. *J. Geophys. Res.* 114, B11308.
- Sladen, A., 2007a. Tectonics Observatory Source Models of Large Earthquakes - August/15/2007 (Mw 8.0), Peru.
- Sladen, A., 2007b. Tectonics observatory source Models of Large Earthquakes - September/12/2007 (Mw 8.4), South Sumatra, Caltech Tectonics Observatory Slip History Database.
- Sladen, A., 2008a. Tectonics observatory source Models of Large Earthquakes - May/12/2008 (Mw 7.9), East Sichuan.
- Sladen, A., 2008b. Tectonics observatory source Models of Large Earthquakes - November/16/2008 (Mw 7.3), Sulawesi.
- Sladen, A., 2009a. Tectonics observatory source Models of Large Earthquakes - October/07/2009 (Mw 7.6), Vanuatu.
- Sladen, A., 2009b. Tectonics observatory source Models of Large Earthquakes - September/30/2009 (Mw 7.6), Padang.
- Tanioka, Y., Ruff, L.J., 1997. Source Time Functions. *Seismol. Res. Lett.*
- Tocheport, A., Rivera, L., Van der Woerd, J., 2006. A Study of the 14 November 2001 Kokoxili Earthquake: History and Geometry of the Rupture from Teleseismic Data and Field Observations. *Bull. Seism. Soc. Am.* 96, 1729–1741.
- Yagi, Y., 2002. 2002 Northern Sumatra, Indonesia earthquake. iisee.kenken.go.jp.
- Yagi, Y., 2003. Source process of large and significant earthquakes in 2003. *Bull Int Inst Seismol Earthq Eng.*
- Yagi, Y., 2004. Source rupture process of the 2003 Tokachi-oki earthquake

determined by joint inversion of teleseismic body wave and strong ground motion data. *Earth Planets Space* 56, 311–316.